

CLAIMS

- 1 (Previously presented): A lithium ion secondary battery comprising a positive electrode, a negative electrode and a solid electrolyte, said solid electrolyte being made in the form of a thin film comprising a lithium ion conductive inorganic substance, selected from the group consisting of a lithium ion conductive crystal and a lithium ion conductive glass-ceramic.
- 2 (Previously presented): A lithium ion secondary battery as defined in claim 1 wherein said thin film solid electrolyte has thickness of 20 μ m or below.
- 3 (Previously presented): A lithium ion secondary battery as defined in claim 1 wherein said thin film solid electrolyte is formed directly on an electrode material or materials for the positive electrode and/or the negative electrode.
- 4 (Previously presented): A lithium ion secondary battery as defined in claim 1 wherein said thin film solid electrolyte has lithium ion conductivity of 10^{-5} Scm⁻¹ or over.
- 5 (Previously presented): A lithium ion secondary battery as defined in claim 1 wherein said thin film solid electrolyte comprises the inorganic substance in an amount of 40 weight % or over.
- 6 (Previously presented): A lithium ion secondary battery as defined in claim 1 wherein said inorganic substance is the lithium ion conductive crystal.
- 7 (Canceled)
- 8 (Previously presented): A lithium ion secondary battery as defined in claim 1 wherein said inorganic substance is a lithium ion conductive glass-ceramic.
- 9 (Previously presented): A lithium ion secondary battery as defined in claim 1 wherein

said inorganic substance is powder of the inorganic substance.

10 (Previously presented): A lithium ion secondary battery as defined in claim 9 wherein said inorganic substance powder is powder of a lithium ion conductive glass-ceramic.

11 (Previously presented): A lithium ion secondary battery as defined in claim 9 wherein an average particle diameter of the inorganic substance powder is 1.0 μm or below.

12 (Previously presented): A lithium ion secondary battery as defined in claim 9 wherein said thin film solid electrolyte comprises a lithium ion conductive inorganic substance powder in a polymer medium.

13 (Previously presented): A lithium ion secondary battery as defined in claim 9 wherein said thin film solid electrolyte comprises a lithium inorganic salt and lithium ion conductive glass-ceramic powder in a polymer medium.

14 (Previously presented): A lithium ion secondary battery as defined in claim 3 wherein said thin film solid electrolyte is formed by direct coating on an electrode material or materials for the positive electrode and/or the negative electrode.

15 (Previously presented): A lithium ion secondary battery as defined in claim 3 wherein said thin film solid electrolyte is formed by crystallizing an amorphous layer which is formed by direct coating on an electrode material or materials for the positive electrode and/or the negative electrode.

16 (Previously presented): A lithium ion secondary battery as defined in claim 1 comprising a positive electrode, a negative electrode and a solid electrolyte wherein said positive and/or negative electrode comprises lithium ion conductive inorganic substance powder.

17 (Previously presented): A lithium ion secondary battery as defined in claim 16

wherein said inorganic substance powder in the positive and/or negative electrode has an average particle diameter of 3 μ m or below.

18 (Previously presented): A method for manufacturing a lithium ion secondary battery having a thin film solid electrolyte comprising a lithium ion conductive inorganic substance comprising a step of forming the thin film solid electrolyte by coating the lithium ion conductive inorganic substance directly on an electrode material or materials for the positive and/or negative electrode.

19 (Previously presented): A method for manufacturing a lithium ion secondary battery as defined in claim 18 comprising a step of preparing slurry comprising the lithium ion conductive inorganic substance, and a step of forming the thin film solid electrolyte by coating the slurry directly on the electrode material or materials for the positive and/or negative electrode.

20 (Previously presented): A method for manufacturing a lithium ion secondary battery as defined in claim 18 comprising a step of coating the lithium ion conductive inorganic substance directly on the electrode material or materials for the positive and/or negative electrode to form an amorphous layer, and a step of forming the thin film solid electrolyte by crystallizing the amorphous layer.